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Attention: MAIL STOP AMENDMENT
Examiner: Nghi H. Ly
GROUP ART UNIT: 2617
UNITED STATES PATENT AND TRADEMARK OFFICE

Fax: (571) 273-8300
Phone: (571) 272-7911

Pages: Cover + 14 + 2 + 1 = 18
From: Georgann S. Grunebach
Assistant General Counsel

Date: January 30, 2007
Fax: (310) 964-0941
Phone: (310) 964-4615

CERTIFICATION OF FACSIMILE TRANSMISSION UNDER 37 CFR 1.8

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Georgann S. Grunebach, Reg. No. 33,179
(Printed Name of Depositor)

January 30, 2007
(Date of Signature)

Re: Serial No. 09/661,986 Attorney Docket No. PD-200083

Filing Date: September 14, 2000

Please find attached:

- REQUEST FOR STATUS WITH COPY OF RESPONSE FILED TO OFFICE ACTION DATED JULY 31, 2006 (14 pages)
- SUPPLEMENTAL DISCLOSURE STATEMENT (2 pages)
- SUBSTITUTE PTO FORM 1449 (1 page)

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The DirecTV Group, Inc., CA/LA1/A109, P. O. Box 956, El Segundo CA 90245

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Date: January 30, 2007 Georgann S. Grunebach, Reg. No. 33,179

PATENT
PD-200083
Customer No. 020991

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Application of:	:	Date:	January 30, 2007
Harold Rosen et al.	:	Group Art Unit:	2617
Serial No.: 09/661,986	:	Examiner:	LY, Nghi H.
Filing Date: September 14, 2000	:		

For: FIXED CELL COMMUNICATION SYSTEM WITH REDUCED INTERFERENCE

REQUEST FOR STATUS

Mail Stop Amendment
Commissioner for Patents
P. O. Box 1450
Alexandria VA 22313-1450

Dear Sir:

1. A timely response to a non-final Office Action dated July 31, 2006 was facsimile transmitted to the USPTO Centralized Facsimile Number, 571-273-8300, on August 15, 2006 (see Exhibit A) which includes the USPTO Auto-Reply Facsimile Transmission.
2. A status check of the application on the USPTO PAIR system indicates the mailing of the non-final Office Action dated July 31, 2006, but the receipt of the response dated July 31, 2006 is not indicated. Applicants herewith submit another copy of the response for the USPTO's records and request that the status of the application be updated to reflect the Applicant's timely response.

Respectfully submitted,

Georgann S. Grunebach
Attorney for Applicants

The DIRECTV Group, Inc.
CA/LA1/A109
2230 E. Imperial Highway
P. O. Box 956
El Segundo CA 90245

Telephone No. (310) 964-4615

Auto-Reply Facsimile Transmission

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Attention: MAIL STOP AMENDMENT
Examiner: Ngh H. Ly
GROUP ART UNIT: 2617
UNITED STATES PATENT AND TRADEMARK OFFICE

Fax: (571) 273-8300
Phone: (571) 272-7911

Pages: Cover + 1 + 10 = 12
Date: August 15, 2006

From: Georgann S. Grunebach
Assistant General Counsel

Fax: (310) 964-0941
Phone: (310) 964-4615

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Georgann S. Grunebach, Reg. No. 33,179 (Printed Name of Depositor) — August 15, 2006 (Date of Signature)

Re: Serial No. 09/661,986
Attorney Docket No PD-200063

Filing Date: September 14, 2000

Please find attached:

- TRANSMITTAL FORM PTO/SB/21 (1 page)
- RESPONSE TO OFFICE ACTION DATED JULY 31, 2006 (10 pages)

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PAGE 1/12 * RCVD AT 8/15/2006 7:47:07 PM [Eastern Daylight Time] * SVR:USPTO-EFXRF-2/29 * DNIS:2738300 * CSID:3109640941 * DURATION (mm-ss):00-58

EXHIBIT A

****
*** TX REPORT ***
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TRANSMISSION OK

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Attention: MAIL STOP AMENDMENT
Examiner: Nghi H. Ly
GROUP ART UNIT: 2617
UNITED STATES PATENT AND TRADEMARK OFFICE

Fax: (571) 273-8300
Phone: (571) 272-7911

Pages: Cover + 1 + 10 = 12

Date: August 15, 2006

From: Georgann S. Grunebach
Assistant General Counsel

Fax: (310) 964-0941
Phone: (310) 964-4615

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Georgann S. Grunebach, Reg. No. 33,179
(Printed Name of Depositor)

August 15, 2006
(Date of Signature)

Re: Serial No. 09/661,986

Attorney Docket No. PD-200083

Filing Date: September 14, 2000

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Georgann S. Grunebach, Reg. No. 33,179
(Printed Name of Depositor)

August 15, 2006
(Date of Signature)

Re: Serial No. 09/661,986

Attorney Docket No. PD-200083

Filing Date: September 14, 2000

Please find attached:

- TRANSMITTAL FORM PTO/SB/21 (1 page)
- RESPONSE TO OFFICE ACTION DATED JULY 31, 2006 (10 pages)

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PTO/SB/21 (07-06)
Approved for use through 09/30/2006. OMB 0651-0031
U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE

TRANSMITTAL FORM

(to be used for all correspondence after initial filing)

Total Number of Pages in This Submission: 11

Application Number	09/661,986
Filing Date	09/14/2000
First Named Inventor	Harold Rosen
Art Unit	2617
Examiner Name	LY, Nghi H.
Attorney Docket Number	PD-200083

ENCLOSURES *(Check all that apply)*

- ☐ Fee Transmittal Form
  - ☐ Fee Attached
- ☑ Amendment/Reply
  - ☐ After Final
  - ☐ Affidavits/declaration(s)
- ☐ Extension of Time Request
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- ☐ Information Disclosure Statement
- ☐ Certified Copy of Priority Document(s)
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Remarks

SIGNATURE OF APPLICANT, ATTORNEY, OR AGENT

Firm Name	The DirecTV Group, Inc.		
Signature			
Printed name	Georgann S. Grunebach		
Date	August 15, 2006	Reg. No.	33,179

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Georgann S. Grunebach (Name of Registered Representative)

(Signature) August 15, 2006
(Date of Signature)

Reg. No. 33,179

Customer Number 020991

PATENT
Docket No. PD-200083

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In Re Application of:

Harold Rosen

Serial No. 09/661,986 Group Art Unit: 2617

Filed: 09/14/2000 Examiner: Nghi H. Ly

For: FIXED CELL COMMUNICATION SYSTEM WITH REDUCED INTERFERENCE

AMENDMENT

Mail Stop Amendment
Commissioner for Patents
P. O. Box 1450
Alexandria, VA 22313-1450

Sir:

In response to the Office Action dated July 31, 2006, please enter the following remarks.

Remarks begin on page 2 of this paper.

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REMARKS

Applicants wish to thank the Examiner for considering the present application. In the Office Action dated July 31, 2006, Claims 1, 4-15, 17-21, 23 and 24 are pending in the application. Applicants respectfully traverse.

Claims 1, 4, 5, 7-13, 15, 17-19, 21, 23 and 24 stand rejected under 35 U.S.C. §103(a) as being patentable over *Durvasula* (6,137,451) in view of *Colella* (6,781,968). Applicants respectfully traverse.

The present invention is best understood with respect to the system illustrated in Fig. 1, the plot of beams using the same resources in Fig. 4 and a contour plot illustrating the suppression in Fig. 5. Generally, the present invention is used to selectively suppress side lobe interference by reshaping the antenna surface so that suppressed portions and non-suppressed portions are formed. The suppress portions align with beams having the same resource to prevent interference.

As is shown in Fig. 1, and described in the third full paragraph of page 5, a communication system 10 is described that generates a fixed reuse pattern 12 in a service area from a high altitude communication device 18 described in the first two paragraphs of page 6. The fixed reuse pattern 12 has at least a first resource cell and a second resource cell as illustrated by the various patterns in Fig. 2. This is described in the second full paragraph of page 7. The method of claim 1 further includes the step of selectively suppressing a side lobe 52 (illustrated in Fig. 7B and described in the second full paragraph of page 9). Suppression is performed on the first beam as a first resource to form a suppressed portion and a non-suppressed portion so that the non-suppressed portion aligns with the second resource cell and a side lobe suppressed portion aligns with the first resource cell.

Claim 1 was amended previously to highlight that the suppressed portion is in the direction of other beams of the same resource while unsuppressed portions align with the beams of different resources (areas where no interference is present).

Claim 4 recites that the first resource and the second resource comprise a frequency. Claim 5 recites that the first and second resource comprise polarization and claim 6 recites that the first and second resource comprise an orthogonal code. Support for Claims 4-6 is found in the last sentence on page 8.

Claim 7 recites that the high altitude communication device comprises a satellite. Claim 8 recites that the high altitude communication device comprises a stratospheric platform. Support for the high altitude communication device is set forth in the third paragraph of page 5 and the second full paragraph of page 6.

Claim 9 is a communication system claim that is directed to a high altitude communication device 18 that has an antenna 32 as set forth in the first full paragraph of page 7 and is illustrated in Fig. 1. The antenna generates a first plurality of beams in the first resource and a plurality of main lobes directed to one of the first plurality of cells and a plurality of side lobes and a second plurality of beams having a second resource directed to one of the plurality of cells. The antenna selectively shapes the side lobes of the first plurality of beams to be selectively suppressed in directions of beams of said plurality of cells having said first resource and said side lobes are unsuppressed in the second plurality of cells. This is similar to the limitations described above with respect to claim 1. The suppression and non-suppression of the side lobes are best illustrated in Figs. 4 and 5 which are described in the first two paragraphs of page 8.

Claims 10 and 11 correspond to claims 7 and 8 above and, therefore, will not be described in further detail. Claims 12, 13, and 14 correspond to claims 4, 5, and 6 and also will not be described further here.

Claim 15 is directed to a method of forming a communication system that includes the steps of generating, with an antenna, a fixed re-use pattern having a maximum capacity having a first beam having a first resource and a plurality of beams having the first resource. This is illustrated in Figs. 2 and 3 and described in the last full paragraph of page 7.

Claim 15 also recites generating, with the antenna, a second plurality of beams having a resource different than the first resource. This is also illustrated in Figs. 2 and 3 and described in the last full paragraph of page 7. Claim 15 also recites identifying interference locations of the first beam relative to the plurality of second beams and selectively reshaping an antenna to selectively suppress at the interference locations with the first plurality of beams and maintaining the shape of the antenna in the non-interference locations. This is illustrated in Figs. 4 and 5 and the corresponding description in the first two paragraphs of Fig. 8.

Claim 15 further recites maintaining the antenna to not suppress interference at non-interference locations. This is also set forth in the first two paragraphs of page 8.

Claim 17 recites that the interference location corresponds to a side lobe of the first beam. This is set forth in the first paragraph of page 9.

Claims 18, 19, and 20 correspond to claims 4, 5, and 6 and, therefore, will not be described further here.

Claim 21 is directed to a method of reducing interference between beams in a fixed cell communication system generating a fixed reuse pattern using an antenna. This step includes selectively performing side lobe suppression only for beams using a same communication

resource and maintaining a shape of the antenna to not suppress interference for beams using a different communication resource. This is also set forth in the first paragraph of page 9.

Claims 23 and 24 depend from claim 21. Claim 23 specifically recites generating a fixed reuse pattern at a satellite and claim 24 recites generating the fixed reuse pattern at a stratospheric platform. These claims correspond to claim 7 and 8 and will not be further described.

The Applicants agree that the *Colella* reference teaches a cellular-like frequency reuse pattern as is set forth in column 11. Applicants respectfully submit that there is no teaching or suggestion of side lobes of a beam. Further, there is no teaching or suggestion for avoiding interference of side lobes of a beam in the *Colella* reference. The *Durvasula* reference as mentioned in the previous Appeal Brief is different than the present invention.

Applicants, however, disagree with the Examiner's assessment that *Durvasula* teaches "suppressing a side lobe of a beam having a first resource to form a suppressed portion and a non-suppressed portion so that said non-suppressed portion aligns with said second resource cell." The *Durvasula* reference is different than that of the present invention. The *Durvasula* reference has only a primary beam and a secondary beam. Applicants respectfully submit that the Examiner is reading more into the *Durvasula* reference than is set forth therein to form his hindsight reconstruction of the present invention. Applicants admit that the shaping of the reflector is set forth. However, the selective shaping set forth in the present claims is not set forth in the *Durvasula* reference. Applicants have reviewed the Col. 2, lines 9-30 as suggested by the Examiner.

Applicants respectfully submit that this portion is in the summary of the invention and thus the detailed description must be studied in order to find the meaning of these sections.

However, Applicants submit that beginning on line 21 of Col. 2 it states: "By increasing the diameter of the radiating aperture of the reflector, the side lobes of the primary beam can be brought closer in terms of angularization, to the main lobe of the primary beam. In order to minimize interference with transmissions of the secondary beam, the reflector is shaped to suppress primary-beam side lobes in the secondary-beam direction. Furthermore, the reflector is specifically shaped with a surface contour which directs lobes of the primary beam in directions away from the axis of the secondary beam." Upon a review of Col. 4, lines 37-53, it appears that the *Durvasula* reference describes the adjustment of the reflector of the primary feed. In Col. 4, line 42, it states: "Typically, in the construction of the antenna, a diameter of the radiating aperture of the reflector 28, by way of example, is on the order of 50 to 100 times as great as the diameter of the radiating aperture of the primary feed 30. A larger radiating aperture decreases angular spacing among the side lobes 66B and a smaller radiating aperture enlarges the angular spacing among the side lobes 66B. In particular, the angular spacing among the side lobes 66B of the primary radiation pattern 66 are selected to provide for essentially zero radiation in the direction of the main lobe 68A of the secondary radiation pattern 68 by appropriate shaping of the surface contour of the reflector." It appears that the overall surface contour of the device as well as the size of the radiating aperture is changed. Applicants respectfully submit that the entire side lobe is changed in the *Durvasula* reference. Changing the entire side lobe has been known as is set forth in the background of the present invention. These passages certainly do not teach "selectively reshaping the antenna surface at interference locations and maintaining a shape of the antenna in non-interference locations to form a suppressed portion and a non-suppressed portion so that the non-suppressed portion aligns with the second resource cell and a side lobe suppressed portion aligns with the first resource cell." It appears that the Examiner recognizes

this and on page 4 of the Office Action states: "The teaching of *Durvasula* inherently teaches that after the reflector is reshaped, the non-suppressed portion will align with the second resource cell and side lobe suppressed portion will align with the first resource cell. The Examiner then points to Fig. 1, regions 40 and 44 and beams 30 and 32. Reference numerals 40 and 44 refer to the primary beam footprint and secondary beam footprint that correspond to the primary and secondary beams 30, 32. As is described, "the secondary beam is directed to a separate portion of the earth" as stated in Col. 3, line 20. Applicants acknowledge that the reduction of interference between the primary and secondary beams is a desired goal. However, it appears that a conventional approach of changing the antenna shape to suppress the side lobes is set forth. No teaching of selectively changing the side lobes is set forth. Because no selective nature is set forth in the *Durvasula* reference, a suppressed and non-suppressed portion so that the non-suppressed portion aligns with the second resource cell and a side lobe suppressed portion aligns with the first resource cell is not taught or suggested. It should also be noted that on page 9 of the present application, one advantage of the invention is set forth. That is, by relaxing requirements on the side lobe, better main lobe performance may be achieved with the antenna design that requires side lobe suppression for all beams. Applicants respectfully submit that all beams are taught to be suppressed in the *Durvasula* reference.

Durvasula also appears to teach away from the present claims. Col. 4, line 54-Col. 5, line 4, suggests side lobe suppression for beams having different frequencies and different polarization. This is opposite to the present claims.

In response to the above argument, the Examiner in the Final Office Action dated December 21, 2005, characterizes the passage of Col. 2, lines 24-27, as "only the primary-beam's side lobes is selected (not the other) and it reads on applicant's 'selectively suppressing')

at interference locations." However, the Examiner still fails to realize that the claim is not only to selectively suppressing which is set forth but to selectively suppressing a side lobe of a first beam having a first resource by selectively reshaping the antenna surface at interference locations and maintaining a shape of the antenna in non-interference locations to form a suppressed portion and non-suppressed portion so that the non-suppressed portion aligns with said second resource cell and a side lobe suppressed portion of the first beam aligns with other beams having the first resource. Thus, it is not only selectively selecting a side lobe but selectively suppressing the side lobe to form suppressed and non-suppressed portion and the alignment of the non-suppressed and suppressed portions. Thus, it is believed that the Examiner is mischaracterizing the reference but even though the Examiner mischaracterizes the reference, he still fails to recognize the suppressed and non-suppressed portion in the alignment thereof.

In response to the above, the Examiner believes that the *Durvasula* reference does teach selective shaping. The Examiner points to column 2, lines 24 through 27. This sentence states, "In order to minimize interference with transmissions of the secondary beam, the reflector is shaped to suppress primary-beam side lobes in the secondary beam direction." The Examiner then goes on to state, "That is, only the primary beam side lobes is selected (not the other) and it reads on applicant's 'selective shaping.'" Applicants respectfully submit that this does not read fully upon the suppression set forth in the claims. Claim 1 specifically recites selectively reshaping the antenna at interference locations and maintaining a shape of the antenna in non-interference locations to form a suppressed portion and a non-suppressed portion so that the non-suppressed portion aligns with the resource cell and a side lobe suppressed portion of the beam aligns with other beams having the first resource. Applicants respectfully submit that this is different than that set forth in the claims. Applicants' desire is to not suppress as much of the

beams as possible. Therefore, the portions that are non-suppressed correspond to the second resource cells since these beams do not have the same resource. The suppressed portions align with the same resource cells. While it is clear that the *Durvasula* reference does shape the reflector, the type of shaping and how the shaping is performed is very different than that set forth above.

The Examiner states, "Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention was made to provide the teaching of *Collella* into the system of *Durvasula* in order to provide regional wireless communication." The Examiner points to column 1, lines 20-22 for this motivation. However, providing regional or wireless communication is typically a general goal of all satellite systems. Therefore, Applicants respectfully submit that a proper motivation has not been set forth and that a hindsight reconstruction of the invention is submitted. That is, there has been no teaching or suggestion for selectively suppressing side lobes of a first beam at interference locations and maintaining a shape of antenna in non-interference locations.

Applicants also object to the Examiner characterizing Figure 5 beam 38 and beam 42 of selectively shaping in the middle of page 3 of the July 31, 2006 Office Action. Applicants respectfully submit that no selective reshaping is taught or suggested in that passage or column 2, lines 9-13. Applicants also object to the Examiner's characterization of "only" which is underlined on page 4 in reference to the primary beam side lobes being selected. Applicants respectfully believe that the entire reflector of *Durvasula* is being changed. Therefore, Applicants do not agree with the assertion that "only the primary beam side lobes are selected". Applicants, therefore, respectfully request the Examiner to reconsider this rejection.

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Claims 4, 5, 7-13, 15, 17-19, 21, 23 and 24 are believed to be allowable for at least the same reasons set forth above.

Claims 6, 14 and 20 stand rejected under 35 U.S.C. §103(a) being unpatentable over *Durvasula* in view of *Colella* and further in view of Official notice. Applicants respectfully submit that no teaching or suggestion is provided in any of the references for the user of an orthogonal code. Therefore, because these claims depend on allowable independent claims, Applicants respectfully request the Examiner to reconsider this rejection as well.

In light of the amendments and remarks above, Applicants submit that all rejections are now overcome. The application is now in condition for allowance and expeditious notice thereof is earnestly solicited. Should the Examiner have any questions or comments which would place the application in better condition for allowance, the Examiner is respectfully requested to call the undersigned attorney.

Should any fees be associated with this submission, please charge Deposit Account 50-0383.

Respectfully submitted,

Dated: August 15, 2006

By: _____
Georgann S. Grunebach, Reg. No. 33,179
Attorney for Applicants

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